Assignment 1
AI1110: Probability and Random Variables
Indian Institute of Technology Hyderabad

CS22BTECH11061

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12.13.4.2 An urn contains 5 red and 2 black balls. Two balls are randomly drawn. Let X represent the number of black balls. What are the possible values of X? Is X a random variable?

Solution: Possible values of X are as follows -

$$X = \{0, 1, 2\} \tag{1}$$

A random variable is an assignment of real values to each outcome of the experiment. Therefore, X is an random variable.

Probability Mass Distribution of X :-

$$p_X(n) = \begin{cases} \frac{10}{21} & n = 0 \\ \frac{10}{21} & n = 1 \\ \frac{1}{21} & n = 2 \end{cases} \tag{2}$$